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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shinichiro Aoe

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC  
220 Fifth Avenue  
16TH Floor  
NEW YORK, NY 10001-7708

EXAMINER

TOLAN, EDWARD THOMAS

ART UNIT

PAPER NUMBER

3725

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,170	<b>Applicant(s)</b> AOE ET AL.	
	<b>Examiner</b> EDWARD TOLAN	<b>Art Unit</b> 3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-13 and 15-32 is/are rejected.
- 7) ☒ Claim(s) 4 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,5-8,10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamura et al. (JP 2001-340911) in view of Kipping et al. (6,295,852). Yamamura discloses a hot rolled strip production method and apparatus wherein fluid jet nozzles (5) squirt a fluid above a steel strip (13) in order to contact a leaping up tip portion of the steel strip. The nozzles (5) are squirted along a longitudinal running direction of the strip. Figure 1a shows that the nozzles (5) are angled in a strip widthwise direction in a plane parallel to the strip running direction at a level above the strip. The nozzles (5) of Yamamura squirt spray at a velocity component higher than a running velocity of the strip in order to reach a tip of the strip in the running direction. Yamamura does not disclose that the strip is purposefully displaced upwardly from a pass line. Kipping teaches (column 2, lines 36-44) that it is known to deflect a strip (1) upwardly from a pass line. Kipping teaches spray jets (6,7) that act on the strip counter to a strip running direction at angles (X,Y). The jets (6,7) are spaced at working distances (a,b) from the strip. It would have been obvious to one skilled in the art at the time of invention to deflect the strip of Yamamura upwardly as taught by Kipping in order to contact the strip with spray at a predetermined level.

Claims 2,3,9,11-13,16 and 20-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamura et al. (JP 2001-340911) in view of Kipping et al. (6,295,852) and further in view of Fujibayashi et al. (6,733,720). Yamamura in view of Kipping does not disclose that the spray level is at 50-200mm and that a jet is inclined at an angle transverse to a plane parallel to the strip running direction at a level above the strip. Fujibayashi teaches (col. 6, lines 55-58 and col. 7, lines 19-22) that it is known to arrange cooling means (12,14) at a distance of 50-100mm from a strip. Fujibayashi teaches spray nozzles (27) that are angled along a strip running direction and counter thereto. Fujibayashi teaches spray nozzle (22) that is inclined at an angle transverse to a plane parallel to the strip running direction at a level above the strip. It would have been obvious to one skilled in the art at the time of invention to provide the nozzles of Yamamura in view of Kipping at known distances and angles as taught by Funibayashi in order to optimize a spraying direction or intensity.

Claims 17-19,31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamura et al. (JP 2001-340911) in view of Kipping et al. (6,295,852) and further in view of Graham (4,497,180). Yamamura in view of Kipping does not disclose shielding. Graham teaches shielding means (126,114) and a cooling spray curtain (80). The shielding means are used to control a volume and location of a sprayed fluid. It would have been obvious to one skilled in the art at the time of invention to provide Yamamura in view of Kipping with cooling means and shielding as taught by Graham in order to control an amount and location of cooling on the strip.

***Allowable Subject Matter***

Claims 4 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose a line direction thrust (FI) equation for a fluid jet passing over a hot rolled strip as claimed in claim 4 and a widthwise thrust (Fw) equation as claimed in claim 14 including the limitations of any one of claims 1 to 3.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication should be directed to Ed Tolan whose telephone number is 571-272-4525. FAX communications should be sent to 571-273-8300.

/Edward Tolan/

Primary Examiner, Art Unit 3725